JET PROPULSION LABORATORY INTEROFFICE MEMORANDUM

November 22, 2006

TO: D. Morris

FROM: S. Chhan/ D. Garibek

SUBJECT: Special Request for Tracking Data and Relay Satellite System (TDRSS) to Use DSS-46 from January 2007 through May 2007

The Resource Allocation Team has completed a special study to analyze the ability of the DSN to provide the TDRSS Project with 24-hour per day support on DSS-46.

## Background

Tracking and Data Relay Satellite System (TDRSS) is inquiring on the feasibility of 24-hour per day support on DSS-46, for a period of five months from January 2007 through May 2007, in order to ensure continuous coverage during the relocation of TDRSS geosynchronous satellites. This study focuses on determining the feasibility of providing 24-hour per day DSN support at DSS-46 for the TDRSS Project, during this period.

## Summary

A review of supports currently required from DSS-46 in the mid-range schedule and User Loading Profile was conducted and this report asserts that based on currently scheduled activities, DSS-46 would only be able to provide TDRSS with an average of 4.4 hours per day if no adjustments are made.

Based on current User Loading Profiles (ULP) for all active missions, these findings confirm that TDRSS would not be able to obtain requested DSN support without severely impacting other missions.

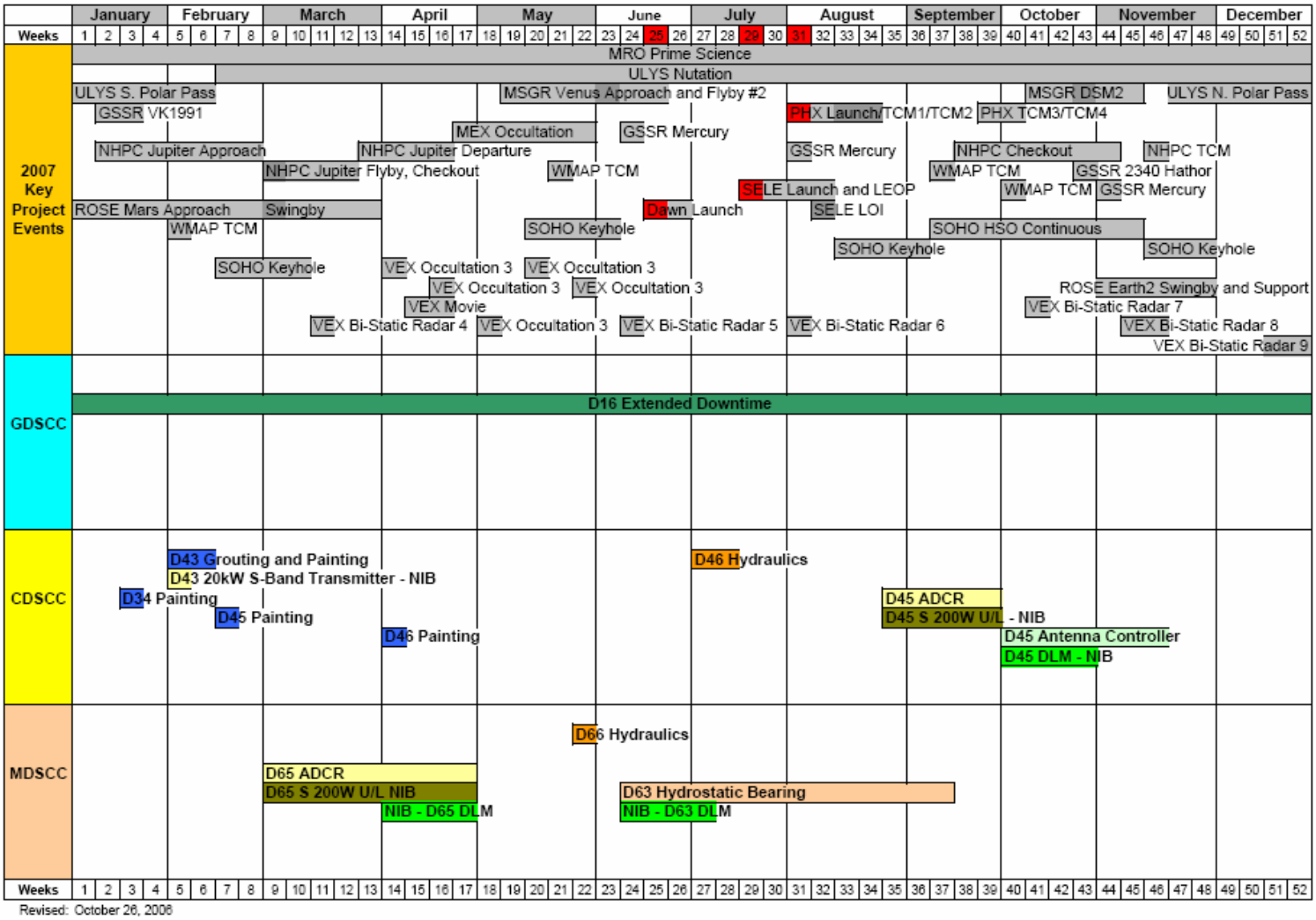
## Assumptions

- DSS-34 (34BWG) down for Painting in Week 3 of 2007
- DSS-43 (70M) down for Grouting and Painting Weeks 5-6 of 2007
- DSS-45 (34HEF) down for Painting in Week 7 of 2007
- DSS-65 (34HEF) down for ADCR Weeks 9-17 of 2007
- DSS-46 (26M) down for Painting in Week 14

**Table-1: Scheduled Tracks and Hours Requested by User at DSS-46 in weeks 1-20**

| User | Tracks | Hours |
|---|---|---|
| ACE | 60 | 60 |
| CHDR | 30 | 84 |
| CLU2 1/2/3/4 | 40 | 80 |
| CLU4 1/2/3/4 | 4 | 6 |
| DSS | 20 | 240 |
| GTL | 420 | 462 |
| POLR | 13 | 364 |
| SOHO | 44 | 363 |
| **Total** | **631** | **1659** |
| **Average Per Week** | **31.55** | **82.95** |

## Major Events and Downtimes for 2007




Revised: October 26, 2006

## Conclusion

Based on current schedules built, through Week 04/2007 and an approximation of future schedules which will be built based on the current User Loading Profiles (ULPs) for all active missions, DSN will be unable to provide TDRSS with the requested 24-hour support on DSS-46 without affecting other mission support.

TDRSS cannot obtain 24-hour per day coverage at DSS-46 during the requested time period without adversely affecting loading at other DSN sites. The Ulysses nutation support is only supportable by Canberra for most of this period. DSS-46 provides a backup forward link to the Ulysses spacecraft. Other Canberra antennas are unable to support even partial offloading. This is due to a high percentage of project view period overlaps and high utilization of the DSN's only southern hemisphere resources.

The alternative for TDRS to be supported by DSS-46 for 24-hour continuous coverage is to move all the users off of DSS-46 and move them to other DSN Resources such as DSS-24, DSS-34, DSS-54 and DSS-27 which have the same capabilities that are able to support those missions that have been moved from DSS-46.

These assumptions are subject to change, in that network loading changes as requirements for planned missions are inputted and updated and periods of antenna downtime are identified.